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INDO-PACIFIC FISHERY COMMISSION

Report of the eighth session of the

INDO-PACIFIC FISHERY COMMISSION WORKING PARTY ON FISH TECHNOLOGY AND MARKETING

Yogyakarta, Indonesia, 24-27 September 1991

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

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REPORT OF THE EIGHTH SESSION OF THE INDO-PACIFIC FISHERY COMMISSION WORKING PARTY ON FISH TECHNOLOGY AND MARKETING

Yogjakarta, Indonesia, 24-27 September 1991

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
Rome 1992

PREPARATION OF THIS DOCUMENT

The Report of the Eighth Session of the IPFC Working Party on Fish Technology and Marketing, Yogjakarta, Indonesia, 24-27 September 1991, has been prepared for the consideration of the 65th Session of the IPFC Executive Committee. A collection of research contributions presented at the Session will be published as a supplement to this report.

Distribution

FAO Fisheries Department
FAO Regional Fishery Officers
Participants
Handling and Processing Selector
IPFC Member Countries

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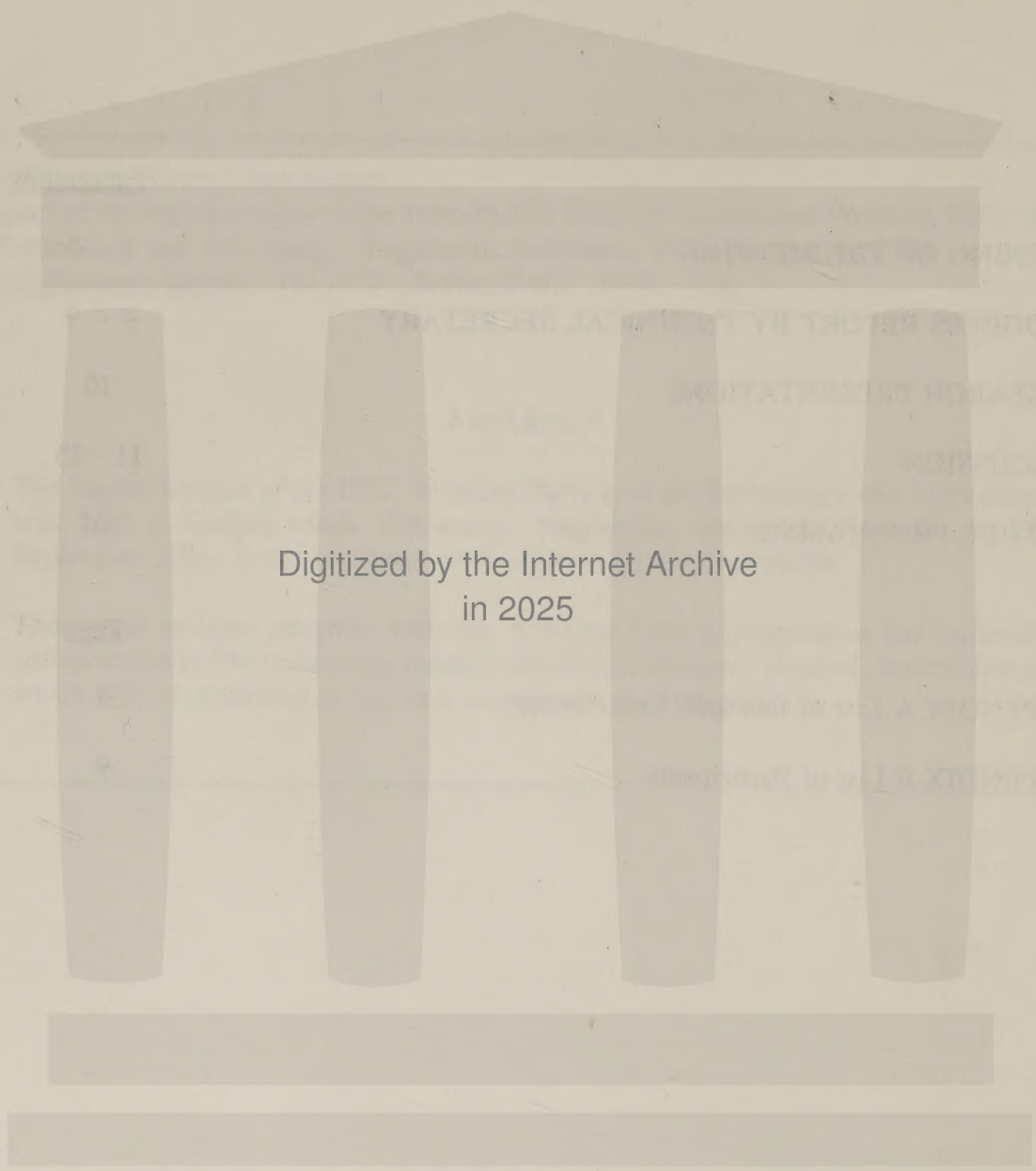
ABSTRACT

The Eighth Session of the IPFC Working Party on Fish Technology and Marketing was held at Gadjah Mada University, Yogjakarta, Indonesia, from 24 to 27 September 1991, at the invitation of the Government of Indonesia.

The report reviews progress with the Working Party's programme for regional collaboration in fish technology research and lists forty-seven research contributions which will be published in full as a supplement to the report.

TABLE OF CONTENTS

	Paragraphs
OPENING OF THE MEETING	1 - 3
PROGRESS REPORT BY TECHNICAL SECRETARY	4 - 9
RESEARCH PRESENTATIONS	10
DISCUSSION	11 - 15
FUTURE PROGRAMME	16
	Page
APPENDIX A List of Research Contributions	5
APPENDIX B List of Participants	9



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Opening of the Meeting

1. The meeting was held at the invitation of the Government of Indonesia at Gadjah Mada University, Yogjakarta, Indonesia, from 24 to 27 September 1991. Following an address from Drs. Suprastwo, Provincial Secretary of the Yogjakarta Special Province, the Rector of Gadjah Mada University, Prof. Mohamad Adnan welcomed participants. The Technical Secretary of the Working Party, Mr David James of FAO, thanked the Indonesian Government on behalf of the FAO Director-General, for hosting the Working Party. The meeting was then formally opened by Mr Muchtar Abdullah, Director General of Fisheries.

2. The major part of the meeting was devoted to the presentation and discussion of research reports arising from the Working Party's programme. These were divided into five sessions:

   Shrimp microbiology
   Fermented fish products
   Fish handling and processing
   Dried fish
   Product development and testing.

   A final session was reserved for discussion of the future programme of the IPFC Working Party and for ways of strengthening the cooperative research network. The forty-seven research contributions are listed in Appendix A while Appendix B gives the list of participants.

3. This report has been prepared for the consideration of the 15th Session of the Executive Committee of the IPFC.

Progress Report by Technical Secretary

4. The Technical Secretary, Mr David James, informed the meeting of some of the activities of FAO during the intersessional period that were of particular interest to the Working Party.

5. Since 1988, FAO together with the Commission of the European Communities, World Bank and UNDP had been engaged in a major study of the fisheries research needs of developing countries. The study was funded by a total of seventeen multi- and bi-lateral donors and would be published in early 1992. The main recommendation of the study is that there is a need for more research to underpin the development and management of fisheries. Priority should be given to the strengthening of national research capacities, with the encouragement of regional collaborative research programmes, and more use of networking. These findings are very much in line with the programme of the Working Party. The major donors to fisheries are expected to give the report their consideration in the future and it is hoped that this will result in an increase of the funds made available for research. It is also hoped that the Fishery Development Donors' Consultation, which initiated the study, will formulate a cohesive policy towards research. During 1992 there would be opportunities for the participating countries to make their views known through a number of meetings and workshops. People participating in the Working Party's networks should be on the

look out for opportunities to advance the cause of fish technology research in the region.

6. The information sheet, FISH TECH NEWS, that had been published for some years as the organ of the Working Party had not been issued recently due to shortage of funds. However, through the FAO/DANIDA Project for Regional Workshops in Fish Technology and Quality Control, it had now been possible to bring these out again. The coverage had been widened to include Africa and Latin America and French and Spanish versions were also being produced. In the future it was hoped to have two issues a year with the possbility also of a Chinese version. Working Party members were urged to provide material.

7. The Working Party's cooperative research project on a comparison of the public health microbiology of farmed and wild shrimp had proceeded well and many of the results would be presented at the meeting. This work had been influential in triggering off other activities particularly in relation to salmonella. There is now ample evidence that salmonella contamination of the environment in which shrimp are farmed is widespread. There is also evidence that removal of the organism during processing, using acknowledged good manufacturing practice, cannot be guaranteed. As a result the imposition of zero tolerance by importing countries, such as the US, is not completely rational. An opportunity would be taken to review the available information. Subsequent to the outcome of such a review, a decision would be made on whether to discuss the possibility of a reconsideration of the regulations with the US authorities, particularly in view of the very positive approach that the new FDA/NOAA Voluntary Inspection Programme was taking.

8. The work on prevention and reduction of microbial pathogens had also been influential in the preparation of a Draft Code of Hygienic Practice for the Products of Aquaculture by the FAO/WHO Codex Alimentarius Committee on Fish and Fishery Products. The Code is intended to assist aquaculturists to raise fish suitable for use as food. In addition to pathogenic micro-organisms, the Code contains sections on pesticide residues, the accumulation of residues of veterinary drugs and parasites. It will be discussed at the next meeting of the Codex Committee on Fish and Fishery Products in mid-1992 and the outcome will have an impact on shrimp and finfish aquaculture in Asia.

9. The funding position of the Working Party's networks had deteriorated during the intersessional period. At the last meeting an evaluation of the impact of the use of Australian funds had been finalized by Prof. Ken Buckle. The evaluation recommended a two-year extension of the project and it has appeared that AIDAB was agreeable. However, after a lengthy silence they had just notified FAO that they would not provide more funds. This means that the network is once more dependent on the very limited FAO Regular Programme funds. While it was probable that enough could be squeezed from this source for coordination and communication, it will not be possible to find enough to conduct research. It is therefore important that participating institutes try to identify alternative sources of funding for research. In this context, one of the most promising alternatives seems to be the Commission of the European Communites (CEC) STD 3 programme (Science and Technology in

Development). This links a minimum of two European institutes with one, but preferably more, institutes in developing countries. There is a great interest in including more fish projects and, with Norwegian participation starting in 1992, the prospects should be thoroughly discussed. The Working Party could be seen as a ready-made network which may be be attractive to the CEC.

Research Presentations

10. The research presentations are not covered by this report as the papers will be edited and printed separately as a supplement.

Discussion

11. In discussing the reasons for the current decline in funding, issues relating to the quality of the research were identified as being of great importance. Poor research or poor performance leads to low funding. There is a need to reassess and generally to improve research performance and cooperation can help in achieving this. It is the many unsolved problems that are the most obvious targets for research but there is always a possibility of duplication. Strengthened TCDC links and a newsletter, such as FISH TECH NEWS, can help to avoid duplication but better research and less overlap will require increased commitments from everybody.

12. It was considered worthwhile to follow-up on the prospects for obtaining funding from the CEC STD 3 programme in order to create a network for research to ensure the full utilization of aquatic resources as direct human food. The specific target group of consumers was identified as the less well off. There is a prospect that FAO will fund a national workshop on full utilization in Thailand in 1992 and it was suggested that this could be widened to include participants from the rest of the region and Europe in order to formulate a networking project for consideration by the CEC.

13. Full utilization also implies making better use of waste. There are very obvious economic and environmental pressures to do this and these can be expected to increase in the future. While the emphasis should be placed on human consumption, we are dealing with a limited resource all of which should be put to maximum use but a strong research base in waste management was required. One area that could be re-examined was the production of fish silage, which had been an earlier programme of the Working Party. The failures to commercialize the products had perhaps been due to social and political reasons. The current high demand for aquaculture feed may have changed the conditions, although the quality of the raw material available could constrain the performance of feed made from it. A research programme in this area could make use of fermentation processes which could also be applicable to other products and processes, such as the production of children's food and the use of fermentation technology to retain fresh fish quality.

14. With regard to exports from the region, it was noted that Asia tends to be an exporter of raw material whereas greater returns may be available if increased attention were paid to value-added products. However, these require a more substantial research base, as well as a better production environment in relation to hygiene and quality

assurance. In view of recent moves by the US and the CEC to place the responsibility for quality on producers, there was a growing need, both for governments and industry in Asia, to understand the new requirements and to take action to implement them. The trend towards making industry responsible is very unlikely to be reversed.

15. The need for an effective extension capacity to make full use of research results was stressed. There is often too much separation between the conduct of the research and putting the results into practice. It was agreed that means of disseminating the results should be built into research projects.

Future Programme

16. In discussing the future programme of the Working Party, it was suggested that this could be grouped into a number of collaborative networks. It is timely that in view both of the maturity of the collaborative activities (the Working Party has been in existence for 17 years) and the lack of central funding, that scientists from the region should now take on the responsibility of Coordinator of the various networks. The Technical Secretary would seek candidates to lead the following networks:

Quality control and inspection. This network would take on board the farmed shrimp microbiology project and follow-up on the possibility of amending import regulations.

Full utilization of aquatic resources, including waste utilization. Product development, the improvement of local fish processes and the development of new technology would be included (there was an indication that Norway could take a leading role in research on fermentation technology).

Bivalve depuration. Although ongoing research was limited, there is a strong need for information exchange.

APPENDIX A

LIST OF RESEARCH CONTRIBUTIONS

Shrimp Microbiology

1. On the Yield Rates in the Indian Prawn Processing Industry by A.K. Kesavan Nair, G.R. Unnithan, and H. Krishna Iyer.

2. Quality of Cultured Tiger Prawn (*Penaeus monodon*) and Deterioration During Storage: A Review by Rowmawaty Peranginangin, Suparno and Ijah Mulyanah.

3. *Salmonella* and *Vibrio Cholerae* in Cultured Tropical Prawns by P.J.A. Reilly and D.R. Twiddy.

4. Combination Effects of Irradiation, Packaging and N_2-Gas for Shelf-Life Extension of Shrimp by Pongpen Rattagool and Hitoshi Ito.

5. Bacterial Load of Normal, Moulting and Delayed Moulting Farmed Tiger Shrimp (*Penaeus monodon* Fab.) by Singgih Wibowo, Sumpeno Putro, Suwarno T. Sukarto and Supomo T.H. Wardoyo.

6. Microbial Flora of Karachi Coastal Water Shrimp (*Penaeus Merguiensis*) and Role in Shrimp Quality Deterioration by Rabia Zurberi and R.B. Qadri.

7. The Importance of *Listeria Monocytogenes* in Processing and Marketing of Seafoods by R.S. Fuchs, D.R. Twiddy, and P.J.A. Reilly.

8. Determination of Filth and Microbiological Quality of Shrimp Paste in Thailand by W. Garnjanagoonchorn, Preeya Vibulsresth and Arunee Akepanidtavorn.

9. The Combined Effect of Chlorine and Frozen Storage on Microbiological Quality of Cultured Shrimp (*Penaeus monodon*) by Sunarya, Betty S.L. Jenie, Winarti P. Rahayu and William Wiguna.

10. Chlorination of Shrimps using Machine by Sunarya, Santoso and Iskandar Ismanadji.

11. Cartotenoid Observation: It's Correlation to Organoleptic Quality on Various Colours of Cultured Shrimp (*Penaeus monodon*) by Sunarya and Sri Daryanti.

12. Effect of Handling Using Chilling Water System on Indole Production and Water Content in Brackishwater Shrimps by Santoso, Abu Naim Assik and Etty Suhaetty.

13. Incidence and Viability of *V. Cholerae* in Seafood Handling and Processing by P.R.G. Varma, T.S.G. Iyer and K. Gopakumar.

14. The Pattern of Post-Mortem Biochemical and Microbiological Changes in Farmed Tiger Shrimp (*Penaeus monodon* Fab.) at Ambient Temperature by Singgih Wibowo, Sumpeno Putro, Suwarno T. Sukarto, Supomo TH Wardoyo.

15. Bacteriology of Tropical Shrimp and Marine Sediments by I. Karunasagar, S.M. Ismail, H.V. Amarnath and Indrani Karunasagar.

16. Impact of Brackishwater Shrimp Culture on the International Shrimp Market by Sumpeno Putro.

Fermented Fish Products

17. Ensiling of Fish by Lactic Acid Bacterial Fermentation for Feed Production by Terje Strom and Jan Raa.

18. Fermented Fish Products in Thailand; Possible Development of Low Salt Products with Extended Shelf Life by Asbjørn Gildberg.

19. Fish Sauce Fermentation: Roles of Microorganisms by Sithichai Charabuddhanond and Chaufah Thongthai.

20. Preparation of Fish Silage by Microbial Fermentation by Rabia Zuberi, Riaz Fatima, Seema Ismat Shamshad and R.B. Qadri.

21. Feeding Studies on Tilapia (*Oreochromis sp.*) Using Fish Silage by Lustina P. Lapie and Carmelita M. Bigueras-Benitez.

22. Changes in Microbiological and Chemical Composition During Fermentation of Fermented Fish (*Peda*) by Kukuh Syaefudin, Swi Budianto and Sunarya.

23. Influence of Commercial Starter Cultures on the Rate of Rice-Fish Fermentation by R.B. Jamias-Apilado and R.C. Mabesa.

24. Evaluation of Fish Silage as Protein Source for Poultry by Carmelita M. Bigueras, and Hildie Maria E. Nacorda.

Fish Handling and Processing

25. Depuration of Mussels: A Preliminary Trial by Iskandar Ismanadji, Swi Budianto, Budi Susilowati and Santoso.

26. Formation of Histamine in Indian Mackerel (*Rastrelliger kangurta*) by P.K. Vijayan, K. Gopakumar and K.K. Balachandran.

27. Preservation Processes for Ready-to-Cook/Serve Fish and Shell Fish Products at Tropical Temperatures by P. Ravindranathan Nair, K. George Joseph, T.S. Unnikrishnan Nair, Cyriac Mathen and K. Gopakumar.

28. Extraction and Composition of Dog Fish Liver Oil by Sunarya, M. Hole and K.D.A. Taylor.

29. Measurement of Water Activity as an Index of Optimising Salt Concentration in Brine Used for the Wet Curing of Mackerel (*Rastrelliger kanagurta*).

30. The Microbial Flora Developing on Indian Mackerel (*Rastrelliger kanagurta*) During Thawing at Different Temperatures by Nirmala Thampuran and K. Gopakumar.

31. Thermal Efficiencies of Containers for Transportation of Iced Fish by C.V.N. Rao, A.K. Chattopadhyay and J.K. Bandyopadhyay.

Dried Fish

32. Use of Food Preservatives in Salted Dried Fish by Santoso and Peter Quantick.

33. Processing of Dried Salted Ray at Muara Angke by S. Rasran, F. Ariyani, N. Fawzya and A. Sari.

34. Use of Dryacide, Deltamethrin and Cycloprothrin to Control Insect Infestation on Dried Salted Fish by Agnes Maria Anggawati, Ninoek Indriati, Siti Rahayu, Sabarudin and John L. Madden.

35. Water Activity and Shelf-Life of Semi-Dried Salted Shark Fillets by A. Ramachandran, K.K. Solanki.

36. Insect Infestation of Dried Fish During Distribution and Marketing by N. Indriati, A.M. Anggawati, Suparno and J.L. Madden.

37. The Utilization of Shrimp Head Waste as Shrimp Head Meal by Iskandar Ismanadji, Sunarya, Surono and Abdul Rahman.

38. The Effect of Different Salting Procedures and Qualities of Raw Material on Some Nutrients During Processing of Salted-Dried Mackerel by Surono, K.D.A. Taylor and G. Smith.

39. Reprocessing of Commercially Cured Fish for Better Quality and Shelf Life by T.S. Unnikrishnan Nair, Cyriac Mathen, K. George Joseph, and P. Ravindranathan Nair.

40. Quality Evaluation and Storage Stability of Boiled Dried Anchovies by Pairat Sophanodora.

Product Development and Testing

41. Identification and Purification of Proteolytic Enzymes from Fish Pyloric Caeca by Sulistiyani and Endang Sri Heruwati.

42. The Utilization of Seaweed as Sheet Agar by Iskandar Ismanadji, Surono, Suyuti Nasran.

43. Effect of Potassium Hydroxide Concentration on Semi Refined Carrageenan by Jamal Basmal, Marlon Tampubolon, Epi Marsinah.

44. Development of Fish Biscuits from Round Scad (*Decapterus Russelli Rupp.*) by S.Y. Yu and R. Kaur.

45. Some Effects of Predrying Treatments on *Eucheuma cottonni* by Ni Made Nuryani, Abu Naim Assik, I. Nyoman, S. Nuitja and Anwar Bey Pane.

46. Development of High Protein and Calcium Rice-Based Extruded Health Food from Fish Powder by Charuvan Charoenphol, Suparb Suanpan, Anadi Chungcharoen, Visith Chavasit, and Sakorn Dhanamitta.

47. Shelf Life of Sardine Protein Powder in Air-Packed Polyethylene Bag by Rerngrudee Pruthiarenun.

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